

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2005/014219

International filing date (day/month/year)
26.04.2005

Priority date (day/month/year)
26.04.2004

International Patent Classification (IPC) or both national classification and IPC
INV. H04N5/232

Applicant
EASTMAN KODAK COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/014219

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/014219

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 2-7

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 2-7 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 2-7
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/014219

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1,8
Inventive step (IS)	Yes: Claims	
	No: Claims	1,8
Industrial applicability (IA)	Yes: Claims	1,8
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2005/014219

Referred documents:

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure (for references, the following abbreviations are used: "P" = page, "C" = column, "L" = line, "F" = figure, "S" = section, "PG" = paragraph, "A" = abstract, "E" = equation, "D" = document; passages cited from the application are written in *italics*, passages cited from prior art documents are put in "quotation marks"):

- D1: US-A-5 915 047 (MURAMOTO ET AL) 22 June 1999 (1999-06-22)
- D2: US-A-4 930 861 (OKABE ET AL) 5 June 1990 (1990-06-05)
- D3: EP-A-0 732 846 (YAMADA, YOSHIRO) 18 September 1996 (1996-09-18)
- D4: US 2004/036792 A1 (MORIYA CHIKATSU ET AL) 26 February 2004 (2004-02-26)
- D5: JP 63 102589 A (FUJI PHOTO FILM CO LTD) 7 May 1988 (1988-05-07)
- D6: JP 04 339489 A (MATSUSHITA ELECTRIC IND CO LTD) 26 November 1992 (1992-11-26)

Re Item III (Non-Establishment of Opinion)

1. Restriction of Search and Examination according to Art. 17(2)(a)(ii) and (b), and 34(4)(a)(ii) and (b), PCT

1.1 Concerned claims and features

■ **Claim 1**

The claim 1 is a severe accumulation of severe unclarities. Only the most severe ones are indicated by the labels (*0) - (*5) (see clarity objections below). Even after a lengthy and careful consideration it was not possible for the examiner to understand the features (*0) - (*5) of claim 1. The features of claim 1 which are indicated above by (*1) - (*5) are unclear (according to Art. 6, PCT) to such an extent that it cannot be determined whether they are disclosed by the prior art or not. It can neither be recognized at the time being how this severe lack of clarity can be overcome without infringing Art. 19(2) and 34(2)(b), PCT. **A meaningful search can therefore not be conducted** for these features. As a consequence, the indicated features are neither searched (refer to **Art. 17(2)(a)(ii) and (b)**, PCT) nor examined (refer to **Art. 34(4)(a)**

and (b), PCT).

■ **Claim 8**

The same objection apply to claim 8 because it is a apparatus claim corresponding to claim 1.

■ **Dependent claims 2-7**

The dependent claims are unclear to such an extent that it cannot be established whether the prior art falls within the scope of the claims. It can neither be recognized at the time being how this severe lack of clarity can be overcome without infringing Art. 19(2) and 34(2)(b), PCT. It is therefore concluded that **no meaningful search is possible**. As a consequence **the following claims were not searched**. The reason is firstly that they inherit severe unclarity from claim 1 from which they depend and secondly that they partly add even more unclear expressions.

1.2 Searched and examined subject matter

The following features are searched and examined. The basis are claim 1 and the description as filed. Sections introduced by the examiner are written in **underlined bold letters**, deleted parts are indicated by " [...] ". A further detailed reasoning is given below.

*An image capture focal length **determining** method, comprising the steps of:
acquiring a plurality of image data while changing focal length of an optical system;
acquiring, from the acquired plurality of image data,
high frequency component [...] values,
[...]
and low frequency component [...] values,
[...]
being [...] lower than the high frequency
calculating a first focal length using [...] a peak value **of the frequency spectrum of the image signal in range** of the high frequency component values.
detecting whether or not there is a moire in image data of this first focal length;
making the first focal length an image capture focal length if there is no moire in the image data of the first focal length;
and when there is moire in the image data of the first focal length,
[...]*

*selecting an image capture focal length in **some** range of possible focal length.*

Re Item VIII (Certain observations on the international application)

2. Clarity objections (Art. 6) and consequences (Art. 17(2)(a)(ii),(b), 34(4)(a)(ii),(b))

The application does not meet the requirements of Article 6 of the PCT, because the following claims are not clear and thus leave the skilled person in doubt as to the meaning of the technical features to which they refer thereby rendering the concerned subject matter unclear in the sense of Article 6, PCT.

■ **Claim 1:**

Claim 1 is **not clear** in the sense of Article 6, PCT, for the following reasons.

- *An image capture focal length **detecting** method,*

The expression *focal length **detecting*** is misleading because the method concerns **determining** or **adjusting** a focal length (see e.g. the rest of claim 1 and the description, e.g. P10,L19-P11,L5). **For the purpose of search and examination** the claim is understood accordingly.

- *high frequency component **evaluated** values*
- *and low frequency component **evaluated** values,*

It is not clear in with respect the *values* are **evaluated** and how *values* differ from **evaluated values**. **For the purpose of search and examination** the term **evaluated value** is therefore understood as value.

- *being **contrast evaluated** values of respective high frequencies components,*
- *being **contrast evaluated** values of low frequency components*

It is not clear what **contrast evaluated** means because the term is neither a standard expression nor defined in the claim. To clarify this unclarity reference is made to the description (P10,L15-18):

*This filter circuit 32 can accurately extract image data **contrast** by using high pass filters (HPF) for extracting high frequency components of comparatively high*

*frequency in order to detect **contrast**.*

Due to the description (desc.: P10,L15-18) and according to the general knowledge of the skilled person (see e.g. D2: C12, last PG; D4: P1, PG0004) the following interpretation is adopted: The energy of the *high frequencies* or of the *low frequency components* in the power spectrum or Fourier spectrum reflect how pronounced these *frequencies* are as compared to others, i.e. how well they are *contrasted* with the other frequencies. **For the purpose of search and examination** the term **contrast evaluated values** is understood as the **energy of frequency components** of the power spectrum or the **values of the Fourier transform** of the image signal.

- *calculating a first focal length using whichever image data a peak value of the high frequency component evaluated values is recorded in; (*0)*

The structure of this sentence does not meet common English syntax and is therefore not clear. It is not clear whether *using* refers to *a peak value* or to *value* or to some other entity which is accidentally missing from the phrase. It is further not clear where (see *recorded in*) and when and for what purpose it was *recorded*.

For the purpose of search and examination the phrase is understood as **calculating a first focal length using a peak value of the high frequency component values**.

- *comparing **reference evaluated values** (*1)*

The term ***reference evaluated values*** is not clear because it is not defined in the claim and because it is not a common technical term in the art.

- *...**corresponding to a length** (*2)*

It is not clear how and in which respect the unclear undefined *reference evaluated values* **correspond** to a what sort of *length*.

- *...**based on the low frequency component evaluated values** (*3)*

It is neither clear how said *length* is **based on the low frequency component evaluated values** and what **based on** shall mean at all in this context. It is neither clear how the ***reference evaluated values correspond***[..] to said undefined *length*.

- *and selecting an image capture focal length in a range where **this evaluated value***

It is not clear to what **this evaluated value** refers because it is not defined in the claim. Rather, above the claim only refers to **evaluated values**. (*4)

- *takes a value that is less than or equal to **the reference evaluated value**. (*5)*

The term **the reference evaluated value** is not clear because it is not defined in the claim. Rather the claim refers only to **reference evaluated values** which neither are defined.

■ **Claim 8:**

Claim 8 is **not clear** in the sense of Article 6, PCT, for the same reasons because it is a apparatus claim corresponding to claim 1.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The application does not meet the requirements of Article 33(2) or 33(3)PCT, because the following claims are not novel or do not involve an inventive step.

3. Objections according to Article 33(2) PCT (Novelty)

The application does not meet the requirements of Article 33(2) and 33(3) of the PCT, because the following claims are not novel and thus also do not involve an inventive step.

■ **Claims 1, 8**

Document **D1** discloses all following features of **claim 1** of the application:

Claim 1. *An image capture focal length detecting method,*
(D1: C4, L12-19)

For the purpose of search and examination the term **focal length detecting** is

understood as focal length determining (the reason was given above).

... comprising the steps of: acquiring a plurality of image data while changing focal length of an optical system;
(implicitly disclosed by D1: C3, L64 - C4, L3)

This feature is implicitly disclosed by D1. The method disclosed by D1 measures the change of low and high frequency components during lens movement. With the lens movement the focal length changes. The low and high frequency components of the image luminance signal are measured during variation of the focal length. Hence, a plurality of image data is acquired while changing focal length of an optical system.

...acquiring, from the acquired plurality of image data, high frequency component evaluated values
(implicitly disclosed by D1: C3, L64 - C4, L3)

For the purpose of search and examination the term evaluated value is understood as value (the reason was given above).

..., being contrast evaluated values of respective high frequencies, and low frequency component evaluated values, being contrast evaluated values of low frequency components of a frequency lower than the high frequency;
(D1: C3, L11-17)
(D1: C3, L53 - C4, L19)
(D1; Figures 3, 4a, 4b)

For the purpose of search and examination the term contrast evaluated values is understood as the energy of frequency components of the power spectrum or the values of the Fourier transform of the image signal (the reason was given above).

...calculating a first focal length using whichever image data a peak value of the high frequency component evaluated values is recorded in;
(D1: C3, L59-63)
(D1: C4, L4-19)
(D1; Figures 4a, 4b)

For the purpose of search and examination the phrase is understood as calculating a

first focal length using a peak value of the high frequency component values (the reason was given above).

The "in-focus position" of the lens corresponds to the *first focal length*.

...detecting whether or not there is a moire in image data of this first focal length;
(D1: C4,L4-19)

... making the first focal length an image capture focal length if there is no moire in the image data of the first focal length;
(D1: C4,L4-19)

...and when there is moire in the image data of the first focal length,
(D1: C4,L4-19)

...comparing reference evaluated values corresponding to a length based on the low frequency component evaluated values with evaluated values corresponding to a length based on the high frequency component evaluated values,
(neither searched nor examined)

Remark: (D1: C3,L53 - C4,L19) and (D1; Figures 4a,4b) may be relevant for this feature. D1 discloses variations ΔS_L . Are the variations ΔS_L *evaluated values corresponding to a length based on the low frequency component evaluated values*? D1 also discloses variations ΔS_H . Are variations ΔS_H *evaluated values corresponding to a length based on the high frequency component evaluated values*? The quotient $\Delta S_L / \Delta S_H$ means at least *comparing values*.

...and selecting an image capture focal length in a range where this evaluated value takes a value that is less than or equal to the reference evaluated value.
(neither searched nor examined)

Remark: (D1: C4,L3-19) may be relevant for this feature. When the method disclosed by D1 has detected a Moiré pattern the lens is moved into a defocussing position (or a focussing position is avoided) and in a defocussed position the power spectrum values related to high frequencies are lower than the in the in-focus position. Does the term this evaluated value mean an evaluated value of high frequencies components whatever peak value of high frequencies components was recorded? Does the phrase less than or equal to the reference evaluated value mean less than or equal to a reference evaluated value related to the first focal length?

It is concluded that the examined features of **claim 1** are not novel. The same applies to **claim 8** which is a corresponding apparatus claim.

Therefore, **claims 1 and 8** are **not novel** according to Art. 33(2), PCT as far as they are examined, and thus also **lack an inventive step** (as far as they are examined) according to Art. 33(3), PCT.

4. Reasoned Statement with regard to industrial applicability (Art. 33(4), PCT)

Claims 1 and 8 are **susceptible of industrial applicability** because the method and apparatus claimed are related to digital cameras.